

In the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application. Please cancel claims 1-45 without prejudice to or disclaimer of the subject matter therein. Please add new claims 46-84. No new matter has been added.

Claims 1-45 (Canceled)

46. (New) A device, comprising:
a mouse housing moveable in an x-y plane;
a sensor coupled to the housing and configured to output a sensor signal based on a movement of the housing in the x-y plane;
an actuator coupled to the housing; and
an eccentric mass coupled to the actuator, the actuator configured to rotate the eccentric mass to output inertial haptic force.

47. (New) The device of claim 46, wherein the actuator is configured to rotate the eccentric mass approximately in at least one of an x-z plane and a y-z plane.

48. (New) The device of claim 46, wherein the actuator is configured to rotate the eccentric mass approximately in an x-y plane.

49. (New) The device of claim 46, wherein the inertial force is a pulse correlated with a simulated interaction of a user-controlled cursor with a graphical object displayed in a graphical user interface.

50. (New) The device of claim 49, wherein the pulse is output with a magnitude based on a characteristic of the graphical object with which the cursor interacts.

51. (New) The device of claim 46, wherein the haptic force is one of a pulse, a vibration, and a texture force.

52. (New) The device of claim 46, further comprising a microprocessor, separate from a host computer, coupled to the sensor and to the actuator, the microprocessor configured to receive host commands from the host computer and to output haptic force signals to the actuator, the inertial haptic force being based on the haptic force signals, the microprocessor further configured to output locative data to the host computer based on the sensor signal.

53. (New) The device of claim 46, wherein the sensor includes a ball that is configured to frictionally contact a surface on which the housing is moved, the surface being associated with the x-y plane.

54. (New) The device of claim 46, wherein the sensor includes an optical sensor configured to detect a movement of a surface relative to the mouse housing.

55. (New) The device of claim 46, wherein the actuator is controlled harmonically with a drive signal the actuator configured to rotate the eccentric mass in two directions and to output the inertial haptic force in response to the drive signal, the inertial haptic force including a vibration.

56. (New) A device, comprising:

- a housing including a moveable portion and a base portion, the moveable portion being configured to be moveable with respect to the base portion, the moveable portion including a magnet;
- an actuator coupled to the housing; and
- an eccentric mass coupled to the actuator, the actuator being configured to rotate the eccentric mass, a magnetic interaction between the eccentric mass and the magnet being configured to cause an inertial haptic force to be output on the moveable portion of the housing, the inertial haptic force based on a position of the eccentric mass.

57. (New) The device of claim 56, wherein the moveable portion is a button on the mouse housing, the base portion is a remaining portion of the housing, the button is configured to close a switch and output a button signal when actuated.

58. (New) The device of claim 56, wherein the device is a mouse and the housing is moveable in an x-y plane.

59. (New) The device of claim 56, wherein the eccentric mass is made of one of iron and steel.

60. (New) The device of claim 56, wherein the eccentric mass is made of a permanently-magnetic material.

61. (New) The device of claim 56, wherein the eccentric mass is rotated in a x-z plane or a y-z plane.

62. (New) The device of claim 56, wherein the device includes an inertial mode in which the eccentric mass is rotated to output the inertial haptic force, the device further includes a kinesthetic mode in which the eccentric mass is rotated to a position to output the inertial haptic force based on the position of the eccentric mass.

63. (New) The device of claim 56, wherein the actuator is configured to output a spring force on the moveable portion.

64. (New) The device of claim 56, wherein the actuator is configured to provide a resistive force on the moveable portion.

65. (New) A device, comprising:
a mouse housing including a moveable portion and a base portion, the moveable portion being moveable with respect to the base portion;
an actuator coupled to the housing;

a mass coupled to the actuator, the actuator configured to rotate the mass; and
a stop member coupled to the moveable portion, the stop member being positioned at least partially in a path of rotation of the mass, the stop member configured to produce a haptic force when the mass is moved against the stop.

66. (New) The device of claim 65, further comprising a sensor coupled to the housing and configured to output a sensor signal associated with a movement of the housing in an x-y plane.

67. (New) The device of claim 65, wherein the moveable portion is a button, the button configured to close a switch and output a button signal when actuated.

68. (New) The device of claim 65, the stop member being a first stop member, the device further comprising a second stop member coupled to the housing, the first stop member and the second stop member configured to define a range of rotation of the mass.

69. (New) The device of claim 65, wherein the actuator is configured to be controlled harmonically with a drive signal input, the actuator configured to rotate the eccentric mass in two directions and produce a vibration in response to the drive signal.

70. (New) The device of claim 65, wherein the device includes an inertial mode in which the eccentric mass is rotated harmonically away from the stop member to output the haptic force.

71. (New) The device of claim 65, wherein the device includes a kinesthetic mode in which the eccentric mass is rotated against the stop member to impart the haptic force to the moveable portion.

72. (New) The device of claim 65, wherein a vibration is output based on periodic interaction of the mass against the stop member.

73. (New) A device, comprising:

a mouse housing moveable in an x-y plane, the housing including a first portion and a second portion, the first portion being moveable with respect to the second portion;

a moving magnet actuator coupled to the housing, the moving magnet actuator having a magnet coupled to the first portion; and

a sensor coupled to the housing and configured to output a sensor signal associated with a movement of the housing in the x-y plane.

74. (New) The device of claim 73, wherein the first portion includes a button configured to close a switch and output a button signal when actuated.

75. (New) The device of claim 74, further comprising a physical spring configured to bias the button substantially to a center location within a degree of freedom of the button.

76. (New) The device of claim 74, wherein the device is in communication with a host computer, the host computer is configured to display a graphical environment including a hierarchy of graphical objects, the graphical objects from the hierarchy of graphical objects each being selectable based on an actuation of the first portion, a haptic force being output based on a selection of one of said graphical objects from the hierarchy of graphical objects.

77. (New) The device of claim 76, wherein each graphical object from the hierarchy of graphical objects is a window from a plurality of windows, each window from the plurality of windows being provided above or below another window from the plurality of windows.

78. (New) The device of claim 77, wherein the host computer is configured such that a selected graphical object from the hierarchy of graphical objects is moved in response to a movement of the first portion.

79. (New) A device, comprising:

a mouse housing moveable in an x-y plane, the housing including a first portion and a second portion, at least part of the first portion is positioned on a side of the housing and is moveable with respect to the second portion;

a linear actuator coupled to the housing and having an actuated portion coupled to the first portion, the linear actuator configured to move the first portion of the mouse housing linearly away from the second portion of the housing when controlled with a control signal, to output a haptic force; and

a sensor coupled to the housing and operative to output a sensor signal associated with a movement in the x-y plane.

80. (New) The device of claim 79, the haptic force being a first haptic force, wherein the housing includes a third portion, at least part of the third portion is moveable with respect to the second portion, the third portion is configured to be moved by a second linear actuator to output a second haptic force.

81. (New) The device of claim 80, wherein the first portion is configured to output a component of the haptic force associated with an x-axis of the device, and the third portion is configured to output a component of the haptic force associated with a y-axis of the device.

82. (New) The device of claim 79, wherein the haptic force is a pulse associated with a simulated interaction of a user-controlled cursor with a graphical object displayed in a graphical user interface.

83. (New) The device of claim 79, wherein the haptic force is one of a pulse, a vibration, and a texture force.

84. (New) The device of claim 79, further comprising a microprocessor coupled to the sensor and to the linear actuator, the microprocessor configured to receive host commands from a host computer in communication with the device, operative to output force signals to the linear actuator to control the haptic force, and operative to receive the sensor signal from the sensor, process the sensor signal, and output locative data to the host computer based on the sensor signal and associated with a movement of the housing.